



## Before You Begin

- The ESTEem Model 195Eg wireless Ethernet radio modem is compatible with many different applications. The most common application is to bridge two or more Ethernet devices or networks. This guide will demonstrate the basic configuration and testing of a pair of 195Eg's. For a more detailed information, please see the ESTEem Model 195Eg User's Manual.
- This guide assumes you have a working knowledge of Ethernet networking, TCP/IP protocol and how to identify and set the TCP/IP address on your computer.
- The 195Eg can be configured using any current web browser software such as Internet Explorer, Netscape or Mozilla.
- The following procedure will provide an initial communication link between two or more Model 195's for testing purposes. All the example commands listed in this guide can be adjusted to fit your communication network. Please consult the ESTEem Model 195Eg User's Manual for more details.

## Unpack Contents

Each node in your ESTEem Model 195Eg's network may have different hardware components based upon the final installation location (i.e Outdoor, Indoor, Point-to-point or Muti-Point). Antenna types, cable lengths, power supplies may be different, but the following items will be required for basic setup:

Model 195Eg



AA109 Resource Disk



Antenna  
(AA01S Displayed)



(2) Ethernet Cables



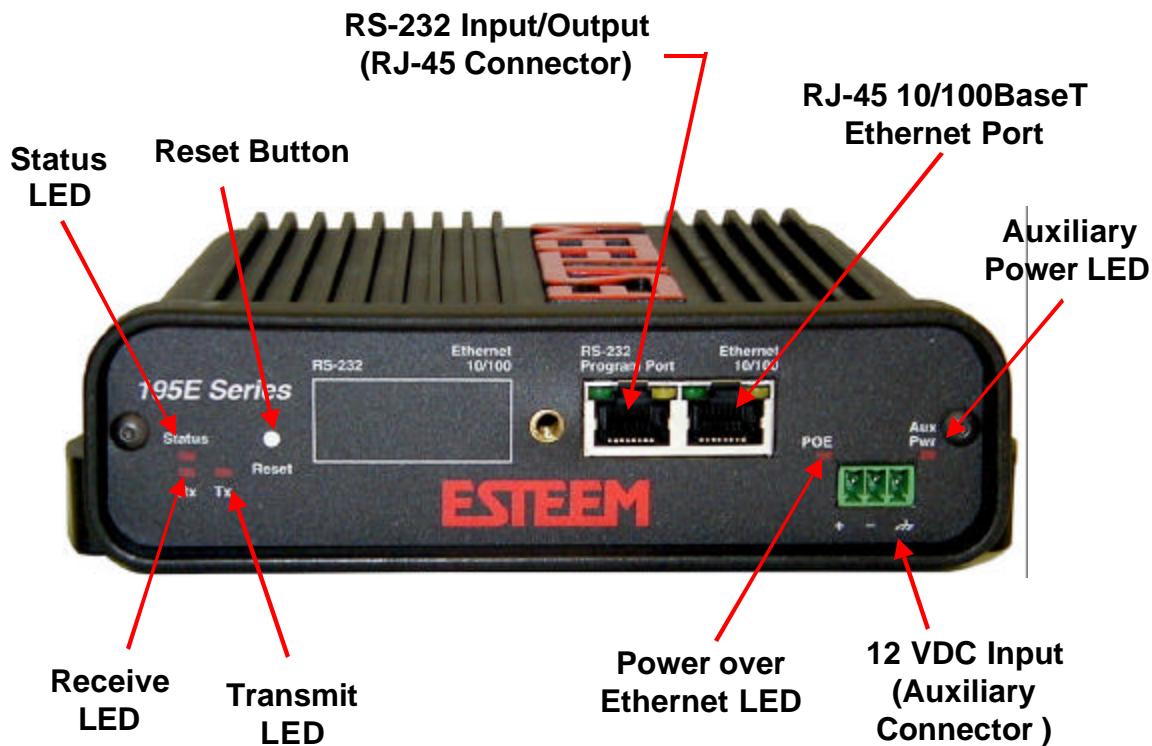
Power Supply  
(AA175 Displayed)



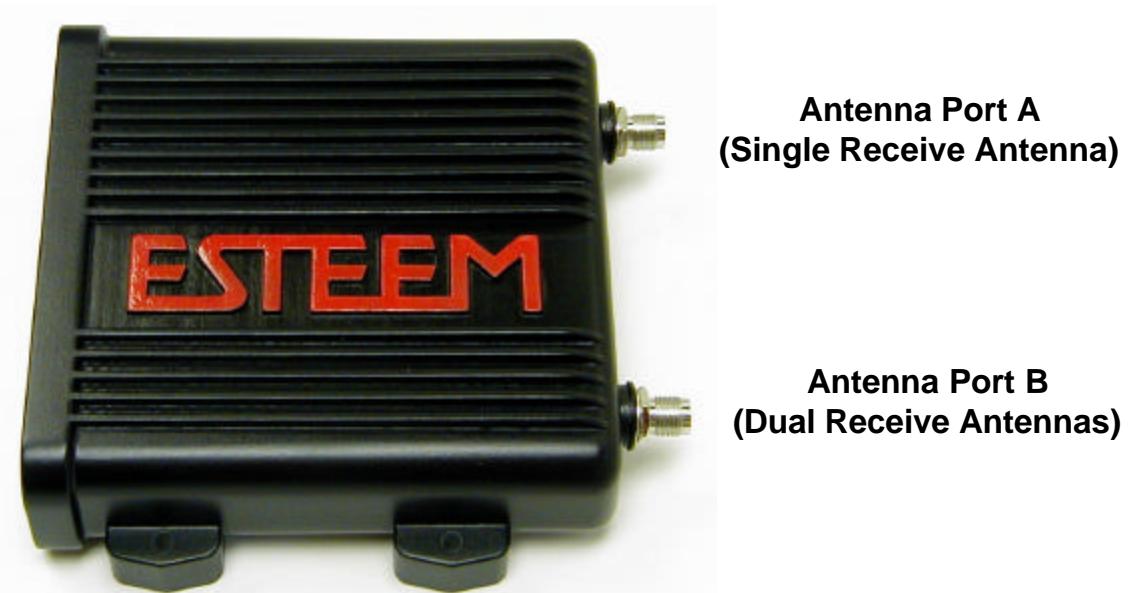
**Note:** Your accessory model numbers may vary from the above, but you will need to locate each of above items to continue configuration.

## Getting to Know the ESTeem Model 195Eg

### Front Panel Overview



### Antenna Overview

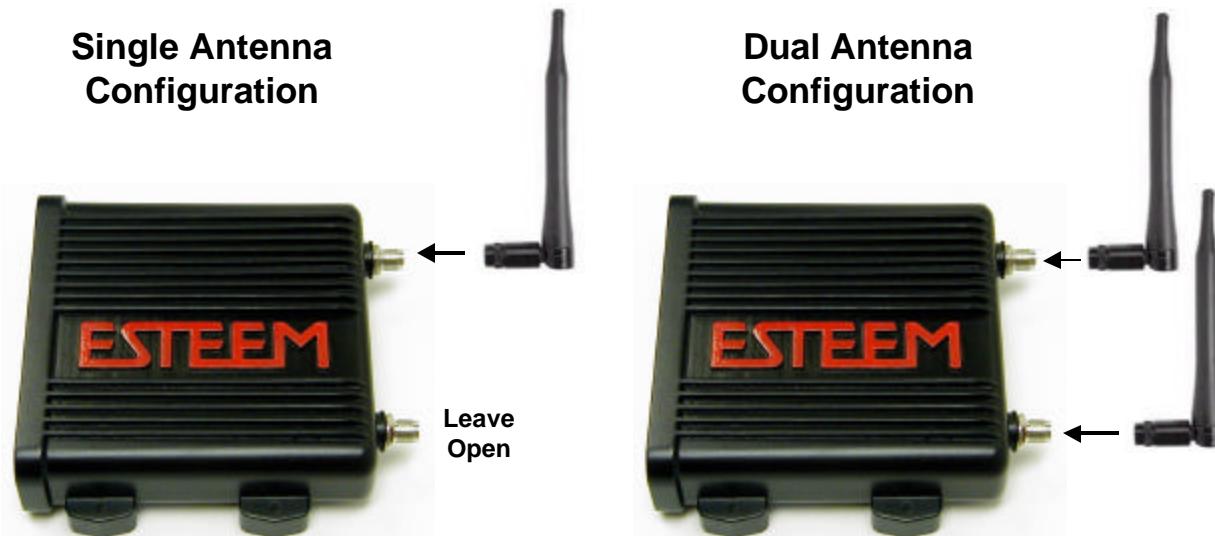


Antenna Connectors  
(TNC Female-RP)

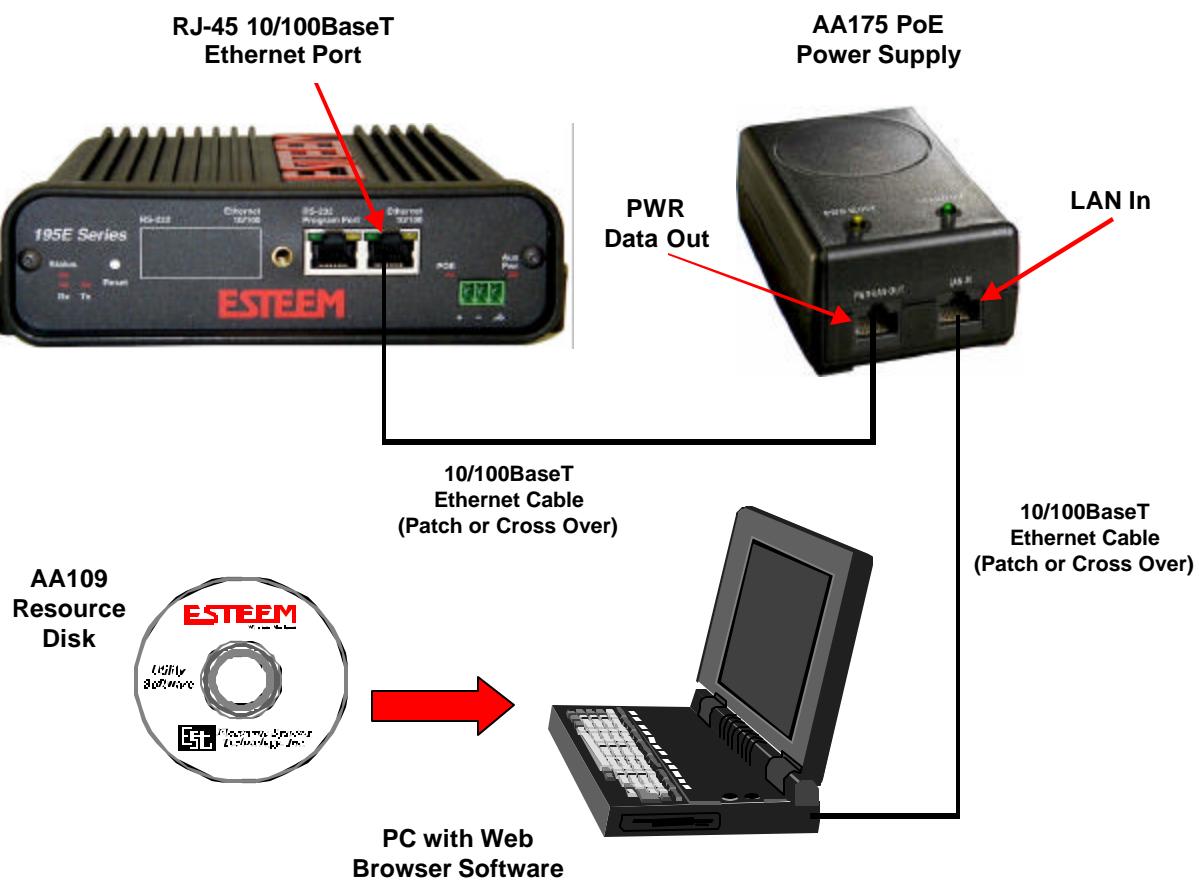
## Begin Programming

1. Assemble the ESTEEM Model 195Eg using the following:

### Antenna Connections



### Power and Data Connection



2. The Model 195Eg will link to other Model 195Eg's on the network via the WLAN Media Access Control (MAC) address found on the bottom of the case. This MAC address is six hexadecimal digits separated by colons and is configured at the factory. Every MAC address in the world is unique and can not be changed. Complete the following chart to aid in your configuration:

Name	Serial Number	IP Address	Ethernet MAC	WLAN MAC
Example Modem 1	E-14001	172.16.8.101	00:04:3f:00:01:01	00:04:3f:00:01:02

3. Configuration of the Model 195Eg is completed through the product's internal web server. To access this configuration page, you will need to enter the 195Eg's IP address in your web browser. The IP address set at the factory is Class B (i.e. 172.16.x.x) address and is printed on the Quality Assurance sheet sent with each 195Eg. If the factory default address matches your network configuration, please proceed to **Using Setup**, otherwise continue to step 4.
4. **Install the ESTeem Discovery Utility.** The ESTeem Discovery Utility will allow you to configure the IP address on the Model 195Eg to match your network. Install the Discovery Utility on your computer by inserting the Resource Disk in your CD drive.

*Note: The ESTeem Resource Disk is stand-alone copy of the ESTeem Web site (Figure 1). Navigation of the Resource Disk is as simple as using your web browser. All technical documentation, User's Manuals and the ESTeem Utility Program is available on the disk.*

Place the ESTeem Utility CD in your CD-ROM drive. The CD will auto load the ESTeem main page

*Note: If the page does not auto load, open your web browser and set your address line to D:\1\_default.html (Where D: is the drive letter for your CD-ROM drive).*



Figure 1 –ESTeem Resource Disk Main Page

From the Main Page select ESTeem Utilities and click on Download ESTeem Discovery Utility.

*Note: This program is saved in a compressed file format. Microsoft Windows XP® will open the file directly, but other operating systems will require a common compression program such as WinZip available for download at <http://www.winzip.com>*

Double click on the 195EdiscoverySetup.exe file listed in the window to install the program.

5. **Set IP Address on the 195Eg.** Connect the Model 195Eg to your computer either direct to the Ethernet card or through a HUB/Switch using a CAT-5e Ethernet cable. The Ethernet port on the 195Eg supports Auto-Negotiation so either a patch cable or crossover cable will work. Open the ESTeem Discovery Program and press the Discover Modems button. The Model 195Eg will be displayed in the program by the Ethernet MAC address and Current IP Address (Figure 3).

*Note: The SSID and Mode of Operation will be adjusted later in the configuration.*

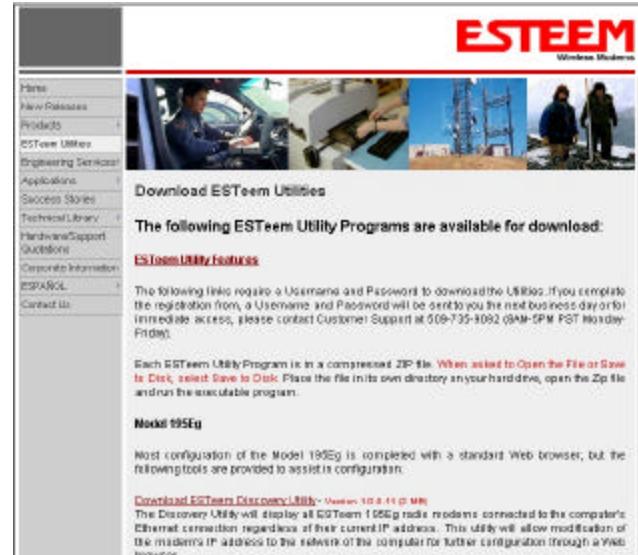


Figure 2 - ESTeem Utility Download

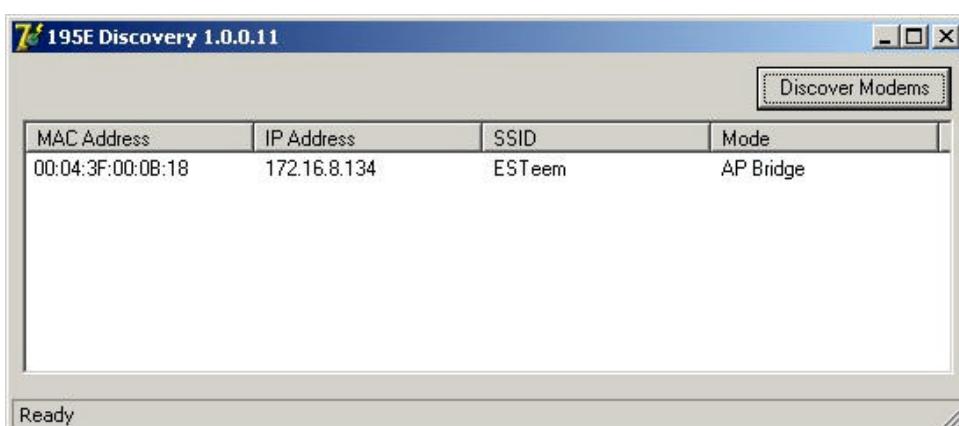


Figure 3 – Discovery Program Main Page

Double-click on the 195Eg you wish to program and the *Configure IP Address* window will be displayed (Figure 4). Enter an IP address and Subnet Mask for the 195Eg that matches your network subnet and press the OK button to save this to the ESTeem. You will receive notification that the Configuration was Successful and the 195Eg will reboot. Proceed to ESTeem Setup to continue configuration.

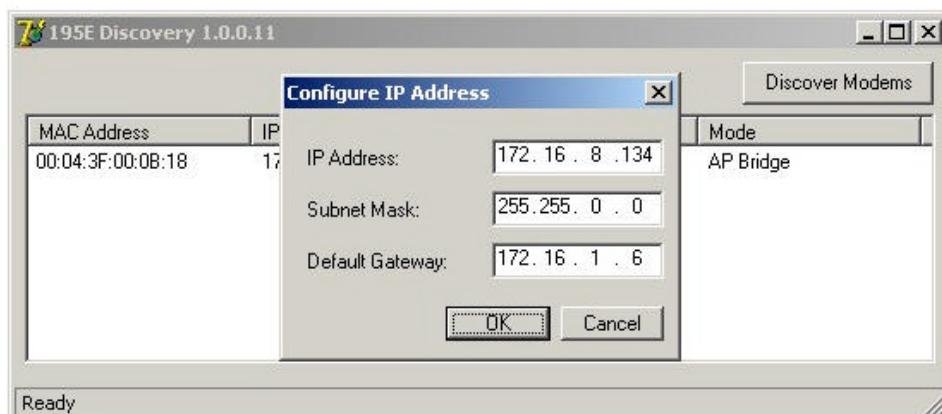
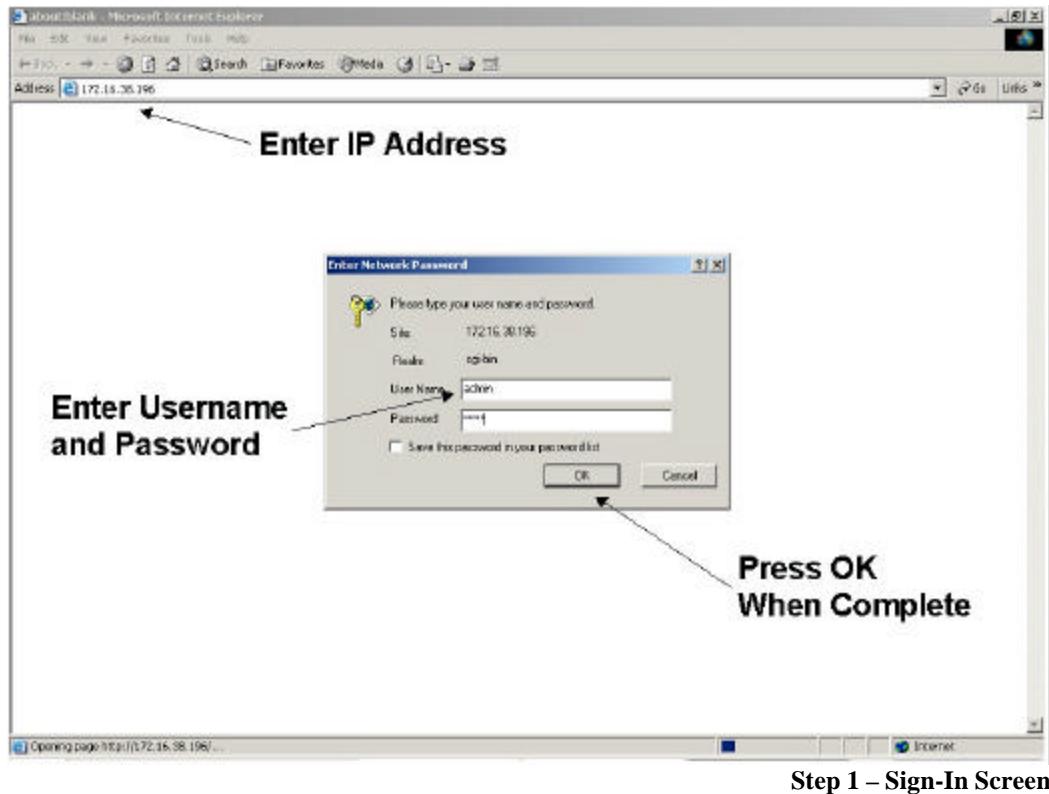


Figure 4 – Change IP Address Window

## Setup Programming

You should now be ready to configure the Model 195Eg through your web browser. Open the web browser program and enter the IP address of the ESTeem in the address line and press enter.

1. When prompted, enter **admin** for both the username and password and press the OK button.



Step 1 – Sign-In Screen

2. Select Setup on the top menu.
3. Press the drop-down menu and select AP Bridge and press the *Next* button.

The screenshot shows the 'EST195E Web Configuration Manager' setup page. At the top, there's a navigation bar with links for Top, Status, Log, Setup, Advanced, Backup, Restore, Software Update, and Reboot. The main content area is titled 'Setup'. A sub-header says, 'This is the main **Setup** Page. Select a mode of operation for the wireless LAN unit from the following list.' Below this is a dropdown menu labeled 'Select Mode of Operation' with the current selection set to 'AP Bridge'. A list of other modes is visible in the dropdown: AP Bridge, AP Masquerade, AP Router, EtherStation, Station Masquerade, Station Router, Ethernet Only, and AirScope(tm).

Step 3 – Select AP Bridge

4. Set the DHCP services to OFF and press the *Next* button.

The screenshot shows the ESTEEM Web Configuration Manager interface. At the top, the title "EST195E Web Configuration Manager" is displayed next to the "ESTEEM Wireless Modems" logo. Below the title is a horizontal menu bar with links: Top, Status, Log, Setup, Advanced, Backup, Restore, Software Update, and Reboot. The "Setup" link is highlighted. The main content area is titled "Setup" and contains the following text: "Select whether you wish to use DHCP client services or whether you wish configure a DHCP server. Selecting "Off" will take you through a manual setup of IP addresses as opposed to using DHCP services." Below this text, it says "Selected mode of operation: AP Bridge". Under "DHCP services:", there are three radio buttons: Off (selected), Client, Server, and Help (link). At the bottom of the page are "Previous" and "Next" navigation buttons, and the text "Step 4 – Turn DHCP Off".

5. Verify the IP address and netmask for the 195Eg (listed as **bridge** device) are correct press the *Next* button.

The screenshot shows the ESTEEM Web Configuration Manager interface. At the top, the title "EST195E Web Configuration Manager" is displayed next to the "ESTEEM Wireless Modems" logo. Below the title is a horizontal menu bar with links: Top, Status, Log, Setup, Advanced, Backup, Restore, Software Update, and Reboot. The "Setup" link is highlighted. The main content area is titled "Setup" and contains the text: "Enter values for the following fields for manual IP setup of the **bridging** device." Below this, it says "Mode of operation: AP Bridge" and "DHCP Services: Off". There are two input fields: "Enter IP address for **bridge** device: 172.16.38.196" and "Enter netmask for **bridge** device: 255.255.0.0". To the right of each input field is a "Help" link. At the bottom of the page are "Previous" and "Next" navigation buttons, and the text "Step 5 – Verify IP Address".

6. Enter in the Gateway address in the default route IP address block and any DNS information for the server. If this is not known or on a network without a Gateway, leave these items at factory default.

EST195E Web Configuration Manager

ESTEEM  
Wireless Modems

Top Status Log Setup Advanced Backup Restore Software Update Reboot

**Setup**

Enter values for the following fields to set up the default route and DNS settings

Mode of operation: AP Bridge

Enter default route IP address:  [Help](#)

Use DNS client services? Yes  No  [Help](#)

Enter DNS domain:  [Help](#)

Enter primary DNS server IP address:  [Help](#)

Enter secondary DNS server IP address:  [Help](#)

[Previous](#) [Next](#)

Step 6 – Enter Gateway Address

7. All 195Eg modems in the network must have the exact same Service Set Identification (SSID). The default SSID is **ESTEEM** and we will use this for demonstration. Enter the SSID as listed above and turn off the wireless security features by selecting the NO radial. Press the *Next* button to continue.

*Note: It is recommended that security be used in all wireless applications. This procedure will forgo the security configuration for brevity. Please see the example applications and the security appendix for further information.*

EST195E Web Configuration Manager

ESTEEM  
Wireless Modems

Top Status Log Setup Advanced Backup Restore Software Update Reboot

**Setup**

In the following fields, select whether you want wireless security features turned on and enter the service set identifier (SSID) that will be common to all wireless LAN devices.

Selected mode of operation: AP Bridge

Turn on wireless security features? Yes  No  [Help](#)

Enter the SSID:  [Help](#)

[Previous](#) [Next](#)

Step 7 – Enter SSID

8. A warning that wireless security is not enabled will be displayed. Press the *Next* button to continue.

The screenshot shows the 'EST195E Web Configuration Manager' interface. At the top, there's a navigation bar with links: Top, Status, Log, Setup, Advanced, Backup, Restore, Software Update, and Reboot. The 'Setup' link is highlighted. In the center, the word 'Setup' is displayed in bold black text. Below it, a red 'WARNING!' box contains the text: 'You have chosen to configure your system without any of the security features enabled on the wireless interface(s). This choice will expose your data to eavesdroppers and allow the general public to connect to your network. If you are sure this is what you want, press "Next". Otherwise press "Previous" and change your "wireless security" choice.' At the bottom of the screen are two buttons: 'Previous' and 'Next'.

**Step 8 – Security Warning Screen**

9. Configure the repeater peer list by selecting Enable the repeater capability radial to YES. Using the chart created in the **Begin Programming** section of this guide, enter the Wireless MAC (WLAN MAC) address of the opposite 195Eg (the 195Eg this unit you are programming will communicate with) in the Peer 1 – MAC Addr field (Below). Leave the Priority and Cost settings at the default values and change the Enable Link radial to YES. Press the *Next* button.

Example Addresses				
Name	Serial Number	IP Address	Ethernet MAC	WLAN MAC
195Eg We Are Programming	E-14096	172.16.38.186	00:04:3f:00:01:01	00:04:3f:00:01:02
Opposite 195Eg We Will Create Wireless Link	E-14034	172.16.38.134	00:04:3F:00:0B:18	00:04:3F:00:0B:1A

The screenshot shows the 'Repeater Peer List' configuration screen. At the top, there's a navigation bar with links: Top, Status, Log, Setup, Advanced, Backup, Restore, Software Update, and Reboot. The 'Setup' link is highlighted. Below it, the word 'Setup' is displayed in bold black text. A note below the title says: 'Enter the appropriate values in the fields below for configuring repeater capability. If the repeater capability is disabled, the peer list is ignored. If the repeater capability is enabled, then a link is established with only those peers in the list that are enabled. Make sure you enter a valid MAC address for each peer where a link is to be established.' There are two radio buttons for 'Enable the repeater capability': 'Yes' (selected) and 'No'. Below this, there's a table for 'Repeater Peer List' with 10 rows, each containing a 'MAC Addr' field, a 'Priority (0-255)' field, a 'Cost (1-65535)' field, and an 'Enable Link?' section with 'Yes' (selected) and 'No' radio buttons. An arrow points from the text above to the 'MAC Addr' field of the first row. At the bottom are 'Previous' and 'Next' buttons.

**Step 9 – Configure Peer Table**

10. All Model 195Egs on the network must be on the same radio channel, representing a particular frequency. If a particular channel has not been assigned for use, leave the 195Eg at a default value of **6** and press the *Next* button.

The screenshot shows the 'EST195E Web Configuration Manager' interface. At the top, there's a navigation bar with links: Top, Status, Log, Setup, Advanced, Backup, Restore, Software Update, and Reboot. The 'Setup' link is highlighted. Below the navigation bar, the title 'Setup' is displayed in bold. A descriptive text says: 'Select the 2.4GHz channel for the wireless LAN device to operate on.' Underneath this text is a dropdown menu labeled 'Select a channel:' with the value '6' selected. To the right of the dropdown is a 'Help' link. Below the dropdown are two buttons: 'Previous' and 'Next'. The background features vertical grey bars on either side of the central content area.

Step 10 – Set Radio Channel

11. Press the *Commit Changes* button and the modem will save all the changes made and reboot. The reboot time is approximately 1 minute to be ready for operation.

The screenshot shows the 'EST195E Web Configuration Manager' interface. The title 'Setup' is highlighted in the navigation bar. A message box contains the text: 'To permanently commit your changes, click on the "Commit Changes" button below. Once the changes have been permanently saved, the system will reboot with the new settings in effect.' Below the message box are four buttons: 'Previous', 'Commit Changes' (which is highlighted), 'Go To Advanced Setup', and 'Cancel'. The background features vertical grey bars on either side of the central content area.

Step 11 – Commit Changes

12. Complete all steps in this **Setup Programming** section for the other Model 195Eg's you will be testing before moving on the Testing Communication section.

## Testing Communication Link

After you have configured at least two of the Model 195Eg wireless Ethernet modems for operation, you can verify communication with each the following steps:

**Status Light** – The quickest source of link status is to view the Status Light on the face of the 195Eg. If the Status light is solid, the Model 195Eg has a connection to another Model 195Eg listed in the Peer Table.

**Status Screen/Peer Table** – To view further information on the status of the communication link (such as connection speed, signal strength and last update time) you can open the Status Screen from the Web Interface. After press the Status tab at the top of the screen the Status: Summary will be displayed showing the status of all ports and memory in the 195Eg. Under the Wireless Status heading click on the View Peer Table (Figure 5). The Peer Table will list all other 802.11b or 802.11g wireless activity seen by the 195Eg and how it is classified.



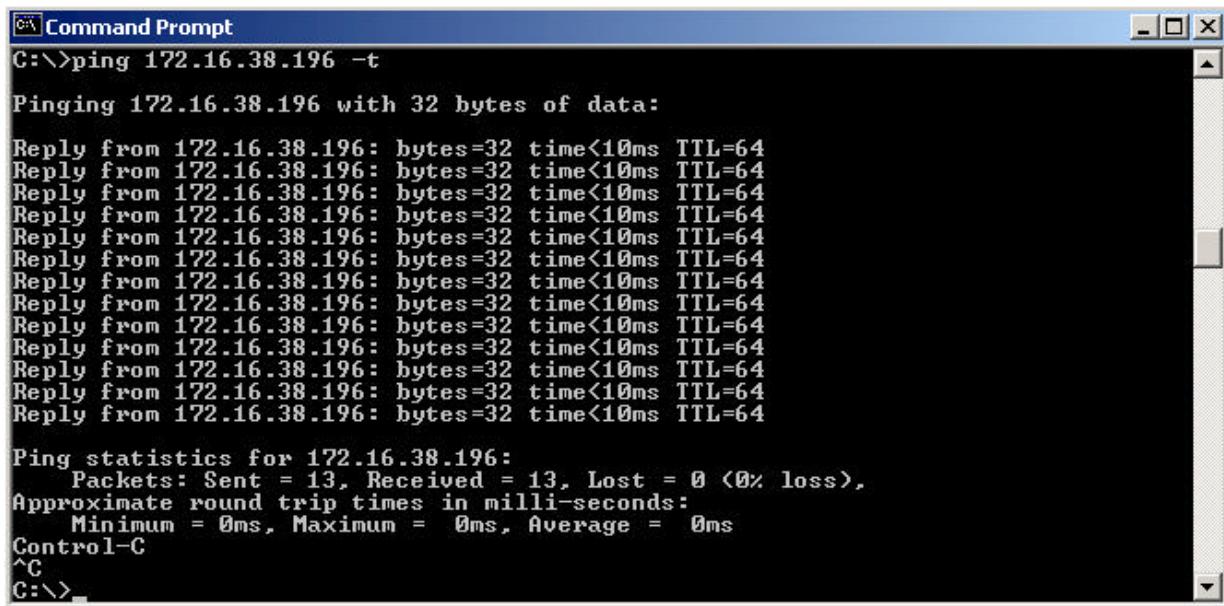
MAC Addr	Signal/Noise	LastRx (sec@kbps)	Enc	SSID
00:04:3f:00:0b:1a	-34/-100	0@11000		
00:02:2d:03:2a:78	-82/-100	171@2000	y	
00:02:2d:06:f1:89	-78/-100	0@2000	y	
00:04:3f:00:09:9e	-72/-100	0@11000	y	ESTteam
00:04:3f:00:0b:1a	-34/-100	0@11000	n	ESTteam
00:04:3f:00:0d:64	-80/-100	0@11000	y	ESTteam
00:04:3f:00:0d:72	0@-100	55@11000	n	ESTteam

Figure 5 – Repeater Peer Table

Find the opposite 195Eg in the Repeater Peers list and information such as signal strength (in dBm), background noise (in dBm), and time/speed of last data packet will be displayed.

*Note: The data rate displayed is not necessarily indicative of the RF data rate between the ESTeems. The rate shown in the Repeater Peer table will be the last RF packet, which could consist of either data, repeater beacon or network probes. For a detailed analysis on the data rate, please consult the ESTeem User's manual.*

**Ping Testing** – The easiest method for testing the efficiency of data flow between the ESTeems is to conduct a Ping test to the opposite modem's IP address. This will test all links in the Ethernet bridge.



The screenshot shows a Windows Command Prompt window titled "Command Prompt". The command entered is "C:\>ping 172.16.38.196 -t". The output displays multiple replies from the target IP address, each showing bytes=32, time<10ms, and TTL=64. After the replies, ping statistics are provided: Packets Sent = 13, Received = 13, Lost = 0 (0% loss). Approximate round trip times are given as Minimum = 0ms, Maximum = 0ms, Average = 0ms. The window includes standard Windows controls like minimize, maximize, and close buttons, and a scroll bar on the right.

```
C:\>ping 172.16.38.196 -t
Pinging 172.16.38.196 with 32 bytes of data:
Reply from 172.16.38.196: bytes=32 time<10ms TTL=64
Ping statistics for 172.16.38.196:
    Packets: Sent = 13, Received = 13, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
Control-C
^C
C:\>
```

## Technical Support

User's Manual and Technical Documentation

<http://www.esteem.com>

E-Mail Support

[Support@esteem.com](mailto:Support@esteem.com)

Phone Support (8AM to 5PM PST Monday-Friday)

509-735-9092